

REMARKS

Claims 1 and 3-20 are pending. Claim 2 has been cancelled. Claim 1 has been amended to include the subject matter of previously pending claim 2. No new matter has been added.

The Office Action rejects claims 1-16 and 18-20 under 35 U.S.C. 103 as being obvious over Kendall in view of Rodewald. This rejection is moot as to claim 2 which has been cancelled. Kendall does not disclose the use of an axial flow fan that utilizes an air flux director to redirect the flow of air in a direction which is generally perpendicular to an axis of rotation of the fan as in claims 1-16 and 18-19 or a fan exhausting the air flow in a direction generally parallel with its axis of rotation as in claim 20. The Office Action asserts that it would have been obvious to replace the radial fan of Kendall with the axial flow fan and air flux director of Rodewald motivated by displacing as much air as possible. Applicants respectfully point out that such a modification is clearly against the teaching of Kendall.

Kendall explicitly states that it is an objective of its invention to utilize a radial fan:

An object of the invention is to significantly reduce noise in a system disposed to remove heat from X-ray tube cooling oil or fluid.

Another object is to provide a system of the above type which significantly reduces noise while maintaining good thermal performance.

Another object is to provide a system of the above type which employs a radial fan as an integral component.

Another object is to provide a system of the above type for use in a computed tomography imaging system, wherein gyroscopic loading of the fan is substantially eliminated, to prolong the life of the fan.

These and other objects of the invention will become more readily apparent from the ensuing specification, taken together with the

accompanying drawings. (Kendall col. 2, lines 45-46)(emphasis added).

Kendall describes its invention as intended to reduce acoustic noise that can disturb patients and personnel. (Kendall col. 1, lines 7-11). Kendall further describes prior art axial fans as contributing to this concern:

Cooling arrangements of the above type commonly employ a fan to move air past or through the heat exchanger, to enhance heat transfer. If the X-ray tube is used in connection with a CT system, the tube, the heat exchanger, and the cooling fan are respectively mounted on an annular gantry, which is rapidly rotated around the patient to acquire a CT image. The gantry may rotate, for example, at 90 rpm. At present, the X-ray tube cooling fans used in CT systems tend to be axial. That is, both the intake and exhaust air streams generated by the fan are directed along the fan axis, i.e., the axis of blade rotation. Herein, "intake" and "exhaust" air streams mean the streams or quantities of air which are respectively moved into and out of a fan by operation thereof. To provide sufficient cooling power, axial cooling fans must be rotated at a speed on the order of 3600 rpm.

In order to resist vibration and provide some measure of sturdiness or rigidity, axial fans generally have a number of struts or like members positioned around the outer edges of the fan blades, in spaced apart relationship. Each time a blade passes by one of the struts, an acoustic noise is produced. For the fan rotational speed stated above, the pure tone, or first harmonic of such noise will exceed 500 Hz. Accordingly, the second and higher harmonics of such noise will exceed 1000 Hz. As is known by those of skill in the art, 1000 Hz is a very significant threshold in reducing the "annoyance factor" associated with acoustic noise. That is, acoustic noise having principal frequency components which exceed 1000 Hz tends to be much more disturbing than noise which does not include such components. (Kendall col. 1, lines 25-54) (emphasis added).

As such, the Office Action's suggested modification goes against the teachings of Kendall, and claims 1, 3-16 and 18-20 are patentable over Kendall and Rodewald.

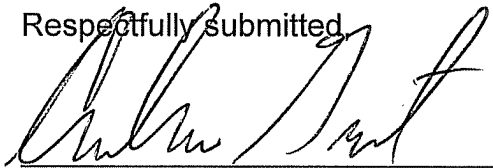
The Office Action rejects claim 17 under 35 U.S.C. 103 as being obvious over Kendall in view of Rodewald and further in view of McCarthy. As described above, Kendall teaches against the use of an axial flow fan that utilizes an air flux director to redirect the flow of air in a direction which is generally perpendicular to an axis of rotation of the fan. Thus, there is no motivation to combine Kendal with Rodewald and McCarthy.

Accordingly, for at least the above-described reasons, withdrawal of the rejections is respectfully requested. Favorable consideration and early issuance of the Notice of Allowance are respectfully requested.

Dated: _____

10/15/07

Respectfully submitted,



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